

GEARTECH	QUALITY PROCEDURE	No. QP8703	SHEET 1 OF 2	
		Rev. A		
Inspection of Gear Tooth Contact Patterns in a Roll Stand		BY RLE	DATE	8/13/02
		CKD JRM	DATE	8/13/02
<div>1. Scope</div> <div>1.1 This procedure covers inspection of gear tooth contact patterns using soft marking compound under no-load or light load in a roll stand.</div> <div>2. Referenced Documents</div> <div>2.1 AGMA 915-3-A99 Inspection Practices- Gear Blanks, Shaft Center Distance and Parallelism.</div> <div>2.2 ANSI/AGMA 2015-1-A01 Accuracy Classification System- Tangential Measurements for Cylindrical Gears.</div> <div>2.3 GEARTECH Specifications:</div> <div>CK8700 QP8700 Gear Tooth Contact Patterns.</div> <div>QP8701 Inspection of Gear Tooth Contact Patterns with Soft Compound.</div> <div>QP8703 Inspection of Gear Tooth Contact Patterns in a Roll Stand.</div> <div>3. Terminology</div> <div>3.1 Roll stand- Sturdy frame for mounting a gearset with the line of centers horizontal. Rollers shall be provided for supporting the pinion and gear and allowing rotation of the gearset by hand. The center distance and tilt of shaft axes shall be adjustable.</div> <div>3.2 Plane of axes- Plane defined by two points separated by roller span L on the axis of one of the shafts, and a point on the axis of the other shaft in accordance with AGMA 915-3-A99.</div> <div>3.3 Center distance, a - Shortest distance between the shaft axes measured at the center of the gear face width.</div> <div>3.4 Normal backlash- Backlash normal to the tooth surface in the plane of action, as measured with a feeler gage.</div> <div>3.5 Face width, b - Width of the gear teeth in the axial direction of the gear.</div> <div>3.6 Functional shaft- The shaft upon which a pinion or gear is mounted when in service.</div> <div>3.7 Roller span, L - Longest distance between the support rollers for either the pinion or the gear. If the roller spans for the pinion and gear are the same, L equals the roller span distance for the pinion.</div> <div>3.8 Total helix tolerance, $F_{\beta T}$ - Tolerance in accordance with ANSI/AGMA 2015-1-A01, equation 12, corresponding to the highest accuracy grade as specified by the engineering drawings for either the pinion or gear.</div> <div>3.9 In-plane deviation, $f_{\Sigma \delta}$ - Shaft parallelism in-plane deviation in accordance with AGMA 915-3-A99.</div> <div>3.10 Out-of-plane deviation, $f_{\Sigma \beta}$ - Shaft parallelism out-of-plane deviation in accordance with AGMA 915-3-A99.</div>				

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4. Significance and Use- See QP8700.				
5. Apparatus				
5.1 Roll stand- Contact pattern tests shall be performed on a roll stand.				
5.2 Contact patterns- Apparatus for inspecting contact patterns shall be in accordance with QP8701.				
6. Test Specimens				
6.1 Gearset- The gearset to be tested shall be mounted on functional shafts.				
7. Procedure				
7.1 Center distance- Center distance (a) shall be set to the nominal center distance as specified by the engineering drawings for the gearset.				
7.2 Backlash- Backlash shall be checked after setting center distance. Normal backlash shall be within limits specified on the engineering drawings for the gearset.				
7.3 Shaft parallelism- The position of the shaft axes shall be adjusted using a precision level and micrometers to achieve the following deviations:				
$f_{\Sigma\delta} \leq 0.25(L/b) F_{\beta T}$				
$f_{\Sigma\beta} \leq 2 f_{\Sigma\delta}$				
7.4 Contact pattern tests- Gear tooth contact patterns shall be inspected in accordance with QP8701.				
8. Report				
8.1 The report shall include the following:				
8.1.1 Record of center distance,				
8.1.2 Record of normal backlash,				
8.1.3 Record of shaft parallelism deviations, and				
8.1.4 Report in accordance with QP8701.				